

**Mars 1:500k High-Resolution Map Bases;** E.M. Lee, K. Edwards, A. Grecu, B. Redding, A. Wasserman, A. Bennett, U.S. Geological Survey, Flagstaff, Arizona

The Mars 1:500k map bases are high-resolution black and white digital photomosaics generated to support the Mars Geologic Mapping Program. The Viking Orbiter images are used to map areas of scientific interest. The final products provided to the mapper include a cutline plot indicating image location and resolution, digital files, and a package consisting of a brownline, cronapaque, cronaflex, ozalid, and continuous tone photographic print.

The mosaics are compiled by digital methods described by Batson [1] and Edwards [2]. The Planetary Imaging Cartography System (PICS) software, developed by the U.S. Geological Survey, was used to process the digital mosaics. The Integrated Software for Imaging Spectrometers (ISIS) software within the UNIX environment will be used starting this year to replace PICS. Currently, ISIS runs on SUN and Alpha platforms. The images are processed through resample, and systematic and random noise artifact removal, radiometric correction, geometric control, and tone matching to produce an even-toned controlled photomosaic. The maps are geometrically controlled to the Mars Digital Image Model (MDIM) and mosaicked at a resolution of 1024 pixels/degree or 58 meters per pixel. The original image resolution ranges from 9 meters to 350 meters per pixel. Subquads are also generated at the highest resolution possible for areas where there is coverage at resolutions higher than the standard 1024 pixels/degree.

The maps are created in sinusoidal equal area projection, then for a final product they are reprojected to a transverse mercator projection for the mapping packages. The dimension

coverage for each high-resolution quadrangle is 5.2 degrees of latitude and longitude, allowing for 0.1 degree of overlap with adjacent quadrangles. The center longitude of each quad is selected based on the cartographic standards devised for the Mars 1:500k scale cartographic products [3]. In our case, the planet is subdivided into 20-degree zones starting with 0 degree longitude. The center of each 20-degree zone is used as the center longitude for all quadrangles which fall within that zone.

The entire data set consists of maps that were produced manually by scaling and pasting photographic prints, in addition to digital mosaics which were published as USGS Miscellaneous Investigation Series (I #) maps. The maps generated after 1995 will no longer be published, but will be made available on CD-ROMs or provided via electronic access upon request. The following quadrangles will be mapped this fiscal year: MTM-20012, MTM-25012, MTM-15022, and MTM-10022. This poster shows examples of digital mosaics and the locations of all high-resolution mosaics processed to date.

#### REFERENCES

- [1] Batson, R.M., 1987, Digital Cartography of the Planets: New Methods, Its Status, and Its Future. *Photogrammetric Engineering and Remote Sensing*, v. 53, no. 9, p. 1211-1218.
- [2] Edwards, Kathleen, 1987, Geometric Processing of Digital Images of the Planets. *Photogrammetric Engineering and Remote Sensing*, v. 53, no. 9, p. 1219-1222.
- [3] Greeley R., Batson, R.M., 1990, *Planetary Mapping*, Cambridge Planetary Science Series 6: Cambridge University Press, New York, NY.